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Utilizing Simulations to Increase Medical Student's Self-Efficacy During the Obstetrics and Gynecology Clerkship

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INTRODUCTION

Many factors, including the recent Covid-19 pandemic, can limit opportunities for Ob/Gyn examination and procedure skills acquisition among medical students[2-5,20]. Simulation based learning is an accepted means of hands-on learning in a low-stakes environment that minimizes risks to patient safety, and has been widely adopted in undergraduate and graduate medical education[8-15]. The American College of Obstetricians and Gynecologists (ACOG) also encourages the use of simulations[16-19].

However, there has been limited research to investigate the effects of obstetric and gynecologic simulations in tandem, in the setting of limited clinical exposure, on medical students' self-efficacy.

OBJECTIVE

Interpret the impact of Ob/Gyn simulation activities on the self-efficacy of third-year medical students at the UNMSOM

METHODS

Participants

Third-year medical students on their Ob/Gyn clerkship between March 2022 to September 2022

Simulations

Students were split into small groups and rotated through each simulation station for 20-30 minutes. Each station had an associated pre-reading, a brief group discussion and instructor demonstration prior to student practice with low-fidelity models.

- OB simulation topics: postpartum hemorrhage, hypertensive disorders of pregnancy
- GYN simulation topics: IUD insertion, abnormal pelvic exam, breast exam

Survey

Students were asked to rate their degree of confidence in performing each simulated task using a 100-point Likert scale (0= cannot do at all, 100= highly certain can do), before and after each simulation. The mean pre- and post-survey confidence rating for each survey question were compared using a two-sample t-test.

Preliminary Result:

Simulation based learning activities **increase** students' **confidence** in performing **obstetric** and **gynecologic procedures, exams** and **clinical reasoning.**

For more information, please use this QR code which will direct you to a complete write up of this study.

RESULTS

- Four clerkship blocks were enrolled, two from the class of 2023, and two from the class of 2024.
- For all survey items, students expressed a statistically significant ($P < 0.05$) increase in their self-efficacy after simulations.
- Students expressed a high usefulness rating (83%) for the simulations in both their future practice and their Ob/Gyn clerkship.

Figure 3. Third-year medical students' self-efficacy in performing obstetric simulations (N=42)

Statement	Pre-survey Mean ± SD	Post-survey Mean ± SD	p-value
Post-partum Hemorrhage			
Know when to call for help in postpartum hemorrhage	52 ± 28	84 ± 13	<0.001
Know to evaluate and monitor vital signs in hemorrhage	51 ± 19	84 ± 12	<0.001
How comfortable are you with management of the third stage of labor?	31 ± 26	66 ± 23	<0.001
Rate your ability to estimate blood loss.	32 ± 22	59 ± 23	<0.001
Rate your ability to diagnose the cause of postpartum hemorrhage.	40 ± 19	73 ± 16	<0.001
Rate your knowledge level of medications and procedures in management of PPH.	38 ± 22	75 ± 15	<0.001
Hypertensive Disorders			
Rate your knowledge of the various types of hypertensive disorders in pregnancy.	49 ± 19	80 ± 14	<0.001
Rate your knowledge of risk factors for preeclampsia.	51 ± 19	78 ± 15	<0.001
Rate your knowledge of severe features of preeclampsia.	54 ± 20	80 ± 15	<0.001
Rate your knowledge of the steps in management of preeclampsia.	40 ± 22	75 ± 17	<0.001
Know when to call for help for the pre-eclamptic/eclamptic patient	52 ± 28	84 ± 13	<0.001
Rate your knowledge of the diagnostic criteria for eclampsia.	52 ± 21	78 ± 17	<0.001
Rate your knowledge of the management of seizure in eclampsia.	46 ± 24	78 ± 15	<0.001
Rate your knowledge of the management of blood pressure control in eclampsia.	43 ± 21	79 ± 14	<0.001
Rate your knowledge of the need for fetal monitoring in eclampsia.	39 ± 20	76 ± 18	<0.001
Know how to perform fetal monitoring and interpretation of fetal monitoring in preeclampsia and eclampsia	36 ± 26	65 ± 22	<0.001

Figure 4. Third-year medical students' self-efficacy in performing gynecologic simulations (N= 38)

Statement	Pre-survey Mean ± SD	Post-survey Mean ± SD	p-value
IUD Insertion			
I know the indications and contraindications of a Levonorgestrel IUD placement.	45 ± 24	78 ± 16	<0.001
I know the indications and contraindications of a Copper IUD placement.	47 ± 24	67 ± 24	<0.001
I am able to properly counsel a patient on all of the risks, benefits, and alternatives of an intrauterine device.	42 ± 24	73 ± 17	<0.001
I am able to state verbally the equipment and supplies necessary to successfully perform the placement of an intrauterine device.	31 ± 24	80 ± 16	<0.001
I am able to demonstrate the steps of a Copper intrauterine device placement.	30 ± 24	73 ± 24	<0.001
I am able to demonstrate the steps of a Levonorgestrel intrauterine device placement.	33 ± 25	81 ± 17	<0.001
Abnormal Pelvic Exam			
I am able to identify the correct axial position of the uterus on a bimanual exam.	28 ± 18	69 ± 17	<0.001
I am able to differentiate a multiparous cervix from a nulliparous cervix.	24 ± 24	61 ± 25	<0.001
I can recognize a cervical polyp if encountered on speculum exam.	31 ± 20	76 ± 14	<0.001
I am able to recognize an ectropion if encountered on speculum exam.	20 ± 22	70 ± 16	<0.001
I am able to identify/locate an ovarian cyst/mass on bimanual exam.	21 ± 19	58 ± 21	<0.001
I am able to identify/locate a small uterine fibroid on bimanual exam.	19 ± 20	58 ± 24	<0.001
I am able to identify/locate a large uterine fibroid on bimanual exam.	26 ± 23	65 ± 23	<0.001
I am able to determine a pregnant uterine size in weeks using pelvic landmarks on bimanual exam.	18 ± 18	65 ± 20	<0.001
Breast Exam			
I am able to perform a breast exam.	44 ± 28	80 ± 19	<0.001
I am able to locate a breast mass.	43 ± 26	76 ± 20	<0.001
I am able to describe a breast mass.	33 ± 23	71 ± 20	<0.001

DISCUSSION

Our findings align with current research[7,12,14,24] and show that students at UNMSOM benefit from, and support, the incorporation of simulation based learning into current curriculum.

This research is ongoing, and we intend to enroll an additional three clerkship blocks worth of students for final analysis.